

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
9 October 2003 (09.10.2003)

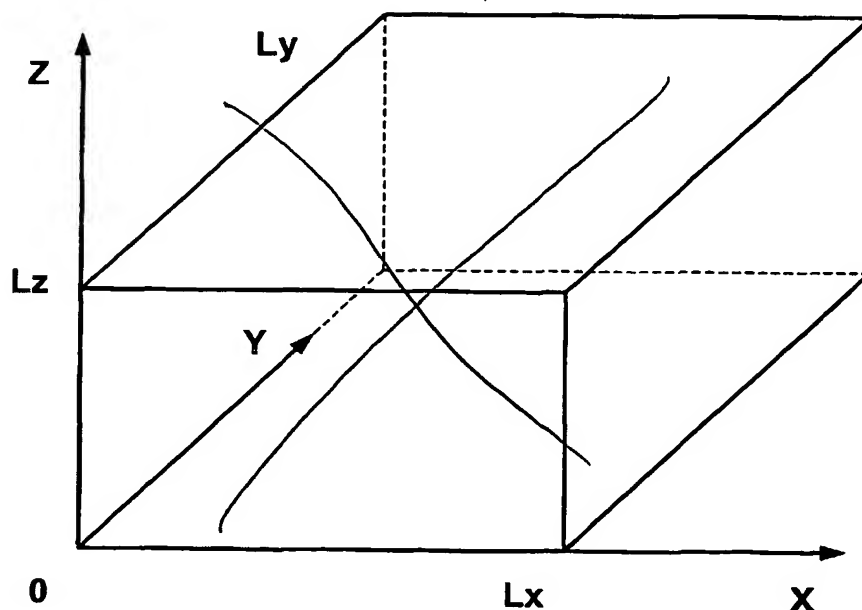
PCT

(10) International Publication Number  
**WO 03/083177 A2**

- (51) International Patent Classification<sup>7</sup>: **C25C**
- (21) International Application Number: PCT/US03/08907
- (22) International Filing Date: 24 March 2003 (24.03.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/366,563 22 March 2002 (22.03.2002) US  
60/366,564 22 March 2002 (22.03.2002) US  
60/373,508 17 April 2002 (17.04.2002) US  
10/234,498 3 September 2002 (03.09.2002) US
- (71) Applicant (for all designated States except US): **BOREALIS TECHNICAL LIMITED** [GB/US]; 23545 NW Skyline Blvd, North Plains, OR 97133-9205 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **TAVKHELIDZE, Avto** [GE/GE]; Suite 3G, Eurolife Building, 1 Corral Road, Gibraltar (GI). **HARBRON, Stuart** [GB/GB]; Suite 3G, Eurolife Building, 1 Corral Road, Gibraltar (GI).
- (74) Agent: **BOREALIS TECHNICAL LIMITED**; COX, Rodney, T., 23545 NW Skyline Blvd, North Plains, OR 97133-9205 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: INFLUENCE OF SURFACE GEOMETRY ON METAL PROPERTIES



(57) Abstract: The influence of surface geometry on metal properties is studied within the limit of the quantum theory of free electrons. It is shown that a metal surface can be modified with patterned indents to increase the Fermi energy level inside the metal, leading to decrease in electron work function. This effect would exist in any quantum system comprising fermions inside a potential energy box. Also disclosed is a method for making nanostructured surfaces having perpendicular features with sharp edges.

WO 03/083177 A2